

CLAIMS

1. A shape detecting apparatus for controlling a tension in a rolled plate, comprising;

5 a pair of fixing members that are fixed to a pair of installation members respectively,

 a support frame of which both ends are supported by the fixing members, and which extends laterally, and

 a plurality of shape detecting units that are fixed
10 detachably on the support frame, adjacently thereto in the lateral direction,

 the shape detecting unit comprises;

 a cylindrical divided roll in contact with the rolled plate,

15 a fixed member that is fixed on the support frame,

 an arm member of which one end rotatably supports the divided roll, and of which the other end is fixed on the fixed member, and

 a load detector for detecting a moment of rotation
20 that acts on the arm member.

2. The shape detecting apparatus specified in Claim 1, wherein the one pair of fixing members are configured so as to be installable in place of a looper roll of a looper device.

25 3. The shape detecting apparatus specified in Claim 2, wherein the looper device comprises a pair of looper arms

that support a looper roll at one end thereof, and a load cell for detecting force acting on the looper roll, at an intermediate location between the support fulcrum of the looper arm and the one end.

5 4. The shape detecting apparatus specified in Claim 2, wherein the support frame is disposed at the far side of the supporting fulcrum of the looper device, thereby the entire shape detecting unit is installed at the far side of the supporting fulcrum.

10 5. The shape detecting apparatus specified in Claim 1, wherein the other end of the arm member is installed swingably on the fixing member, and comprises a roll height adjusting device for adjusting the height of a divided roll by controlling a swing angle of the other end.

15 6. The shape detecting apparatus specified in Claim 1, wherein said each divided roll separably contacts the adjacent divided rolls, comprises a rotating shaft for transmitting rotating power thereto, and the rotating shaft separably contacts the driving shaft of a roll driving
20 device disposed on the fixing member, and is thereby driven to rotate.

 7. The shape detecting apparatus specified in Claim 6, also comprising a bearing for supporting the rotating shaft of the divided roll by an inner ring thereof, and an outer
25 ring of the bearing is supported by one end portion of the arm member.

8. The shape detecting apparatus specified in Claim 1, wherein the arm member comprises a pair of arm panels that support both ends of the divided roll, and the load detector is disposed at both ends of the divided roll and/or on the
5 arm panels.

9. The shape detecting apparatus specified in Claim 1, wherein the divided rolls in contact with edges of the rolled plate are determined by a calculation, and a tension acting from the edges of the divided rolls onto the divided
10 rolls is detected by another calculation.

10. The shape detecting apparatus specified in Claim 1, wherein a sliding portion of the shape detecting unit comprises a sealing member for preventing scale, fluid, etc. from entering from outside thereof.